

CLAIMS

1. A tire building machine comprising a bead core transfer device including a pair of clamp portions for clamping a pair of bead cores, respectively, and placing the clamped bead cores at positions axially spaced from each other
5 by a predetermined distance, and a band drum having an outer peripheral surface for applying a carcass band thereon and causing a radial expansion of at least an axial portion of the carcass band so that it is pressure-bonded to inner peripheral surfaces of the bead cores, said tire building machine further comprising:

band drum rotation angle control means for rotating the band drum on
10 which the carcass band is applied, by a required angle that is determined by a radial force waveform obtained, before building of a desired tire, with respect to a tire of the same size, or by a characteristic waveform having a correlation to said radial force waveform; and

inclination control mechanism for causing a center axis of at least one of
15 the clamp portions of said bead core transfer device to be inclined relative to a center axis of the band drum, in a predetermined direction, and by a required angle that is determined by said waveform.

2. A tire building machine according to claim 1, further comprising a forming drum for applying to a radially outer side of a carcass band, which has
20 been transferred from said band drum and to which said bead cores have already been applied, remaining tire constituting members, and forming drum rotation angle control means for rotating the forming drum by said angle for rotating the carcass band drum by said band drum rotation angle control means, in an opposite direction.

25 3. A tire building machine comprising a forming drum having an outer peripheral surface for applying a carcass band thereon, for causing a radial expansion of only an axially center portion of the carcass band, and a bead setter device including a pair of clamp portions for clamping a pair of bead cores, respectively, and moving the clamp portions so that the clamped bead cores are
30 urged from axially outer sides to stepped surfaces formed at said surfaces of the expanded center portion of the carcass band, to thereby set the bead cores to the carcass band, said tire building machine further comprising:

forming drum rotation angle control means for rotating the forming drum

on which the carcass band is applied, by a required angle that is determined by a radial force waveform obtained, before building of a desired tire, with respect to a tire of the same size, or by a characteristic waveform having a correlation to said radial force waveform; and

5 an eccentricity control means for moving a center axis of at least one of said clamp portions of the bead setter device relative to a center axis of the forming drum, to an eccentric position in a predetermined direction, and by a required distance that is determined by said waveform.

4. The tire building machine according to claim 3, wherein said forming
10 drum rotation angle control means is adapted to cause said forming drum, on which said carcass band is applied and said bead cores have been set, to be rotated by said angle for rotating the carcass band, in an opposite direction.

5. A method for building a tire comprising bead cores, and a carcass
15 extending toroidally between the bead cores and having side portions that are turned-up radially outwards around the bead cores, wherein said method comprises:

 preparing a presumption formula for presuming a first order harmonic
 component of a radial run-out waveform toroidal carcass body that generates
 positional or angular deviation between a center axis of a cylindrical carcass
20 band and a center axis of the bead core;

 measuring a radial run-out of the toroidal carcass body along its entire
 circumference, and obtaining an inverted first order harmonic waveform by
 inverting a measured waveform of the radial run-out, or by inverting a first order
 harmonic component extracted from said measured waveform of the radial run-out;

25 obtaining, upon subsequent building of a tire having the same size as said
 tire by the same building machine, a positional or angular deviation between a
 center axis of a cylindrical carcass band and a center axis of the bead core, which
 generates said inverted first order harmonic waveform, based on calculation
 using said presumption formula; and

30 changing the relative position or relative angle between the center axis of at
 least one of said bead cores and the center axis of the carcass band, in a direction
 of the deviation and by an amount of the deviation, obtained by said presumption
 formula, respectively, so as to set the bead cores to the carcass band.